

Notes on the Egg Capsules and Larval Development of *Conus purpurascens* BRODERIP

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(10 Text figures)

THE EGG CAPSULES of 11 species of Indian Ocean *Conus* and the larval development of 4 species have been reported by KOHN (1961a). KOHN (1961b) has also described the egg capsules of 9 Hawaiian *Conus* species and the larval development of 4 of these. However, no descriptions of breeding season, egg capsules or larval development of the West American *Conus* species are known to this author. This note describes the egg capsules of *Conus purpurascens* BRODERIP, 1833, and some features of the early larval development.

A single large *Conus purpurascens* was found on the underside of a rock 15 inches in diameter at a depth of 2 feet just outside San Carlos Bay near Guaymas, Sonora, Mexico on July 28, 1966. The animal was in the process of ovipositing when discovered. About 150 egg capsules were attached to the underside of the rock at that time. It is not known if all were deposited by this single female, but no other individuals of *C. purpurascens* were found near the rock. However, 4 other specimens of this same species were collected in the same general area.

The egg capsules were typical of *Conus* egg capsules as described by KOHN (1961a, b) and were attached in irregular rows of 10-20 cases (Figure 1). Some cases were deposited upon the top of others. The capsules varied in height from 9.6 to 15.0 mm and from 9.3 to 11.4 mm in width. Capsules were translucent white with the enclosed eggs readily visible inside.



Figure 1

Left: a single egg capsule of *Conus purpurascens* viewed from the side; right: a group of three *Conus purpurascens* egg capsules viewed from the front

Several capsules were collected and taken to the Moss Landing Marine Laboratories where they were kept in finger bowls of sea water which was changed every 3 days.

The number of eggs per capsule ranged from 5400 to 5900 which is considerably higher than the 1650 reported by KOHN (1961b) for *Conus catus* BRUGUIÈRE, 1792, another fish eating species. The number falls more within the range reported in capsules of the vermivorous species.

Unfortunately, due to the lack of optical equipment in Mexico and the delay in transit back to Moss Landing, the collected egg capsules were not examined to determine the stage of development until August 5, 1966. Hence it is not possible to say what the stage of development was when the capsules were collected or what happened up until August 5th.

On August 5th a study was begun of 3 selected capsules to trace development. When examined at that time the capsules contained live embryos that were primarily in a trochophore-like stage of development (Figures 2, 3).

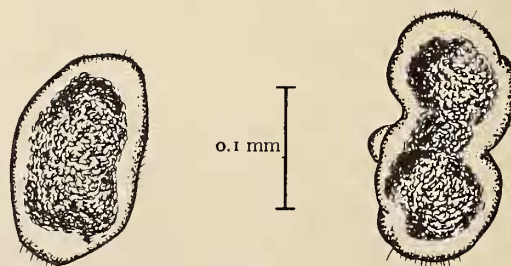


Figure 2

Early trochophore-like larva of *Conus purpurascens*

Figure 3

Trochophore-like larva of *Conus purpurascens*

The size of 9 measured trochophores averaged 0.184 mm in length. The trochophores were very irregular in shape which corroborates KOHN (1961a).

On August 10th the capsules still had many of these trochophore-like stages, but many of larvae appeared to be developing velar lobes (Figures 4, 5) and by August 11th most were in early veliger stage (Figure 6). That the stage of development was not consistent even within

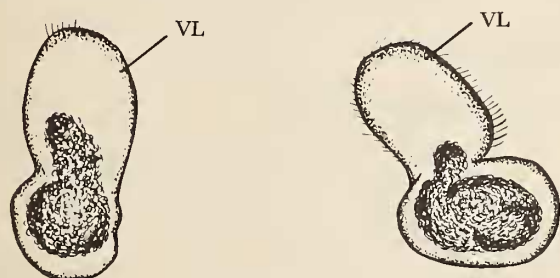


Figure 4

Early veliger stage of *Conus purpurascens*

Figure 5

Early veliger stage of *Conus purpurascens*
VL = velar lobes

single capsules became apparent by August 14th. At that time most of the larvae were in early or late veliger stage (Figures 6, 7), but it was possible to find trochophores and even what appeared like early cleavage stages

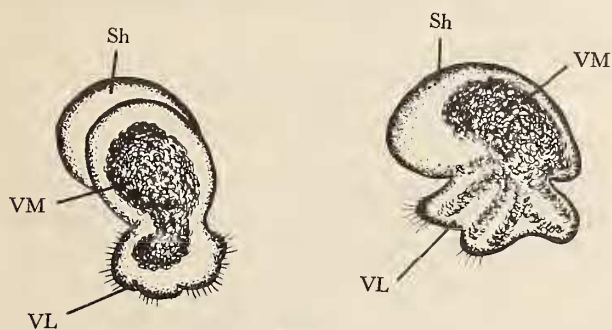


Figure 6

Early veliger stage of *Conus purpurascens*

Figure 7

Veliger stage of *Conus purpurascens*
VL = velar lobes VM = visceral mass SH = shell

in the same capsule. Such a situation was not reported by KOHN (1961a, b) and may have been due to the unnatural conditions to which the capsules had been subjected since collection and to the fluctuating temperatures of the room in which they were kept.

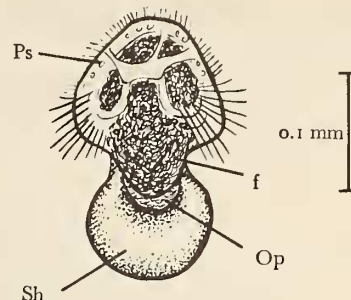


Figure 8

Late veliger stage of *Conus purpurascens*

f = foot

Ps = pigment spots

Op = Operculum

Sh = shell

On August 20th most of the larvae were in a well developed veliger stage in which they remained for the next several days (Figure 8). The size of the veliger shells averaged 0.2011 mm [16 shells measured] and the average total length of 11 veligers was 0.237 mm. No further development was observed, and by August 26th most veligers were dead in the capsules. Hatching was not observed in any of the cases. It is not known if hatching occurs in nature in the veliger stage.

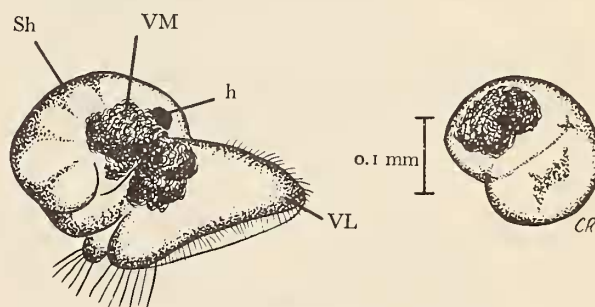


Figure 9

Late veliger stage of *Conus purpurascens*

h = heart

VL = velar lobes

VM = visceral mass

Sh = shell

Figure 10

Veliger shell of *Conus purpurascens*

LITERATURE CITED

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1961b. Studies on spawning behavior, egg masses, and larval development in the gastropod genus *Conus*. Part I. Observations on nine species in Hawaii. Pacif. Sci. 15 (2): 163 - 179